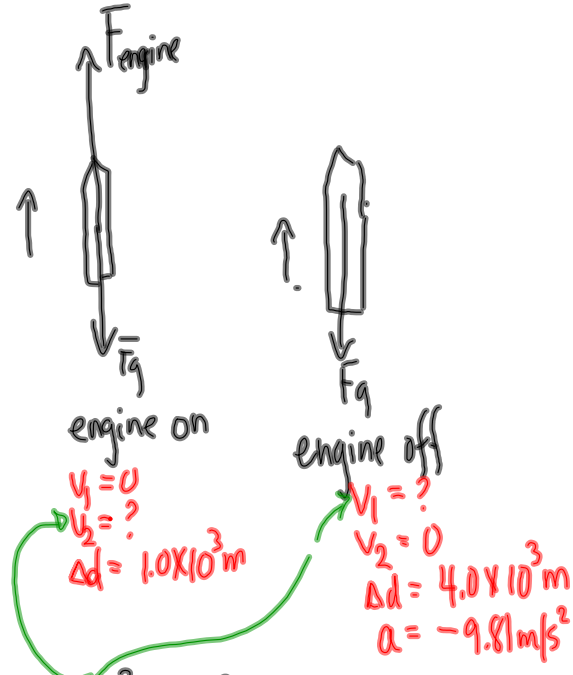


Review

21.

a)



b)

$$v_2^2 = v_1^2 + 2a\Delta d$$

$$0 = v_1^2 + 2(-9.81 \text{ m/s}^2)(4.0 \times 10^3 \text{ m})$$

$$v_1 = 280 \text{ m/s}$$

c)

engine on: ( $v_1 = 0, v_2 = 280 \text{ m/s}, \Delta d = 1.0 \times 10^3 \text{ m}$ )

$$v_2^2 = v_1^2 + 2a\Delta d$$

$$a = \frac{v_2^2}{2\Delta d}$$

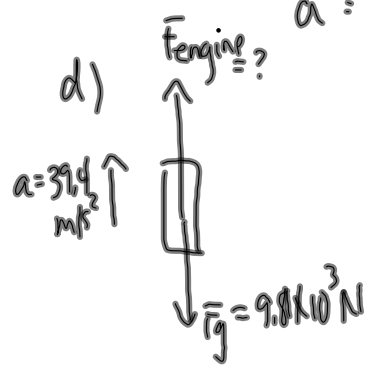
$$a = \frac{(280 \text{ m/s})^2}{2(1.0 \times 10^3 \text{ m})}$$

$$a = 39.4 \text{ m/s}^2$$

engine off:

$$a = -9.81 \text{ m/s}^2$$

d)



$$\vec{F}_{\text{net}} = m\vec{a}$$

$$F_{\text{eng}} - F_g = ma$$

$$F_{\text{eng}} = (1.00 \times 10^3 \text{ kg})(39.4 \text{ m/s}^2) + 9.81 \times 10^3 \text{ N}$$

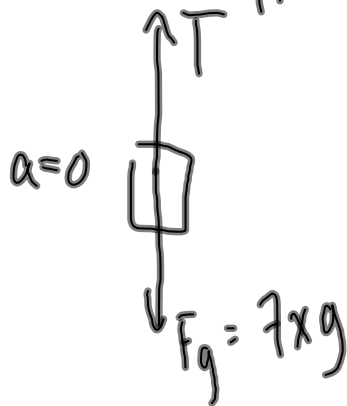
$$F_{\text{eng}} = 4.9 \times 10^4 \text{ N}$$

26. let  $x$  be cheetah's mass  
 $2x$  be Jane's mass  
 $4x$  be Tarzan's mass  

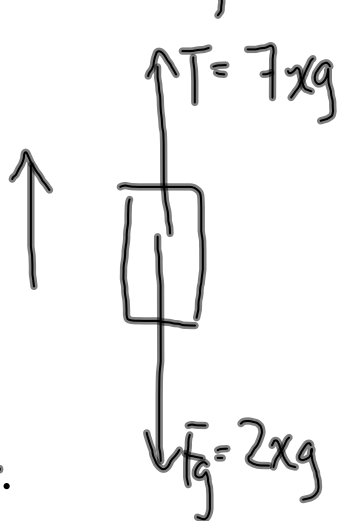

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 $7x$

All three are supported by the vine:



$$T = 7xg$$



$$\vec{F}_{net} = m\vec{a}$$

$$T - F_g = ma$$

$$7xg - 2xg = 2xa$$

$$5xg = 2xa$$

$$a = \frac{5}{2}g$$

for Jane:

$$v_i = 0$$

$$a = \frac{5}{2}g$$

$$\Delta d = 60m$$

$$\Delta t = ?$$

$$\Delta d = v_i t + \frac{1}{2}at^2$$